

SECURITY SYSTEM FOR PREVENTING THE FISHERMEN IN SEABORDER WITH VOICE MESSAGE

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ABSTRACT: In this modern, fast moving and insecure world, maximum risks occur for fishermen in some situations when they travel in a boat for fishing. Now a days we hear about many fishermen are being caught and put under custody and even killed. Since the sea border between the countries is not easily identifiable. To overcome this border crossing we have designed an embedded system which protects the fishermen by notifying the country border to them by using RF based security system and also we are proving surveillance for fishermen in order to save their lives from the natural calamities such as ice berg, tsunami and cyclones.

Keywords: *IMBL (International Maritime Boundary), GPS (Global Positioning System)*

INTRODUCTION

It is an innovative method, in which we are trying to give useful information (Caution) for fishermen in the boat. This method also helps the coast guard to travel in sea within our country boundary limit. In this method RF based information system continuously broadcast the boundary limit of the country. If the fishermen tries to cross over the sea boundary limit, the ship movement is reversed consequently the voice information is received from the transmitter section to the indoorship management area to take necessary action. Inside the ship RF receiver module and microcontroller (AVR 16) based systems carry over all operation. This system also has the facility to inform the region level information and cyclone, tsunami information and fire accident in the ship or boat by using APR 9600/APR33 based voice processor unit. It enables reliability of the safe sailing of boat towards its correct path of destination. Current work focuses on how to safeguard the fisherman from crossing the border of neighboring country using RF signals. In the future, automated alert system will help to avoid accidents and reduce congestion. The ship will be monitored directly by Radar system thus capable of determining the best route and warn each other about the conditions ahead. It is a useful device for safe navigation, especially for fishermen. The design of the device can be made even smaller than proposed by modifying the design specifications. Efficiency can be improved by implementing more accurate GPS systems. This system prevents the smallscale fishermen on crossing the International waters. In this system the GPS updates the current longitudinal and latitudinal values and is compared with the pre-programmed values in the microcontroller unit and is found whether the device is with in the country border or not. This can also be used as a distress alert system to the coastguard section whenever the fishermen face any calamities with in the ocean.

PROPOSED WORK

Thus in this proposed method is to achieve reliable communication at sea through RF communication. If the fishing boat approaches near to the IMBL, controller unit alerts the fisherman about their location, hence they can change the movement position. In some cases the fisherman intends to cross the IMBL for owning more sea resources, this intention has to be restricted. In this project we are using a RF transmitter and RF Receiver circuit to alert the drivers when they are above to cross our country border. The transmitters always transmit a signal with a frequency range of 433.9MHZ & 315MHZ. When the

boat is inside the region then the receiver in the boat will receive the signal without any interruption. If the boat goes beyond the border then the receiver unable to receive the 315MHZ signal. So it sends a control signal to the microcontroller. The microcontroller in turn activates voice information about the incident. For the second signal the microcontroller reverse the engine of the boat .Fire Sensor is the special type of sensor used to identify the fire. If any fire is sensed within the boat then the sensor sends a signal to the microcontroller which in turns activates voice information. Some natural disaster arises coastguard send the voice information about the incident to fishermen.

TRANSMITTER SECTION

RF TRANSMITTER [TX 433.9 and 315 MHZ]:

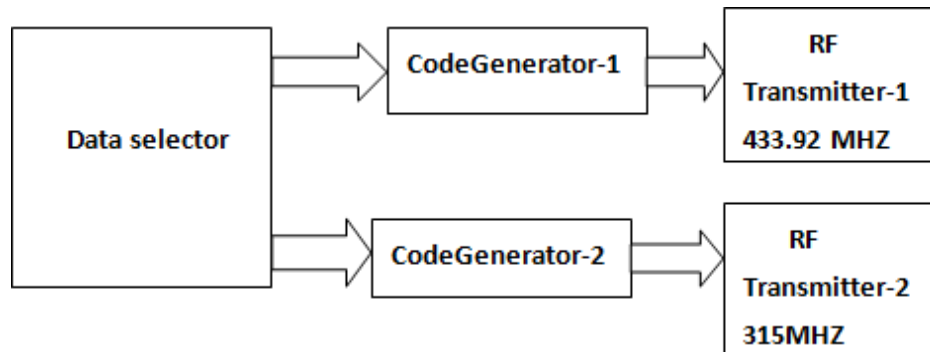


Fig.1.Transmitter Block Diagram

This block consists of transmitter module TX 433.92 MHz and 315 MHz. By using this module, we can send the data serially in the rate of 2400 bps. The data transmission is carried on using OOK modulation, which is amplitude modulation to send binary data. This module consumes very low power.

RECEIVER SECTION

RX 433.92 and 315 MHZ [ISM BAND RX]:

This block consists of RX 433.92 MHz and 315 MHz modules. It receives the data with 433.92 MHz carrier frequency. It produces data serially in the rate of 2400 bps. It operates on 5 to 12V DC and power consumption also very low.

DECODER:

This block consists of IC HT12D based decoder circuit. This has eight-address line & four data line. It receives the data serially and produces parallel output. There is special feature to indicate valuable data received.

TEMPERATURE SENSOR (LM35):

The LM35 is used as a sensor to detect the temperature. For sampling the zone temperature we are used a linear voltage output semi-conductor based LM35 temperature sensor.

COMPARATOR:

In this block consists of potential divider setup and OPAMP 741 based comparator circuit. The comparator circuits compare the set temperature and actual temperature. The comparator circuit output is connected microcontroller circuit.

SPEAKER:

It is an 8Ω speaker to produce voice output for corresponding electrical signal. It is an inductive type speaker with 4 inch diameter. Energy transformation is carried in here.

ENGINE CONTROL CIRCUIT:

The engine control circuit is nothing but a relay driver with 12v relay setup

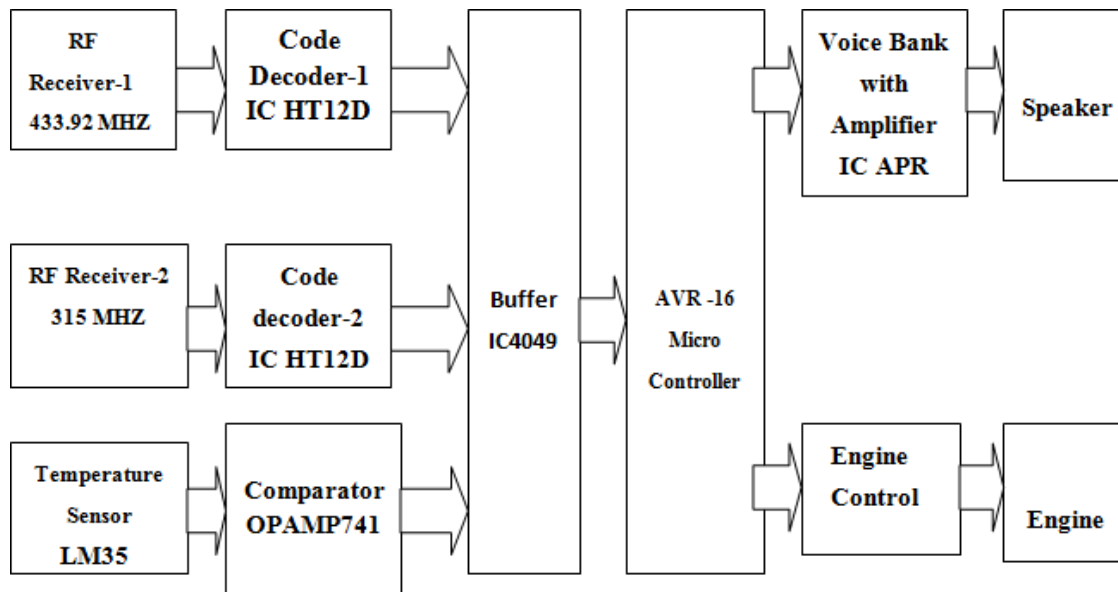


Fig.3(a) Receiver Block Diagram

VOICE BANK WITH AMPLIFIER CIRCUIT: This block consists of IC APR9600 / APR33based voice recorder and player. By using this player we can store voice up to 1minute, it also has feature to divide total time into eight locations. This operation is possible by keeping the status of message selection pin, the recording and play is done using record and play pin at ground status. The voice bank output is connected to the IC lm386 amplifier. It handles the power up to 6 watts. By using minimum external components high quality audio amplification is done.

VOICE RECORDER: This block consists of IC APR33based voice recorder and player. By using this player we can store voice up to 1minute, it also has feature to divide total time into eight locations. This operation is possible by keeping the status of message selection pin. The recording and play is done using record and play pin at ground status. The voice bank output is connected to the IC lm386 amplifier. It handles the power upto 6 watts. By using minimum external components high quality audio amplification is done.

RELAY DRIVER:

The relay section contains relays and drivers. When required and this logic high output has to drive the relay and working as a current amplifier. Here we are using ULN 2003 based relay driver circuit.

RELAY:

This block consists of 12V/750mA relay. It is nothing but electromechanical switch. It makes and breaks electrical circuit by magnetic force. The coil is operated at 12V by the contacts are potential free contact, so we can control any type of signal. Here relay is used to on/off the boat motor.

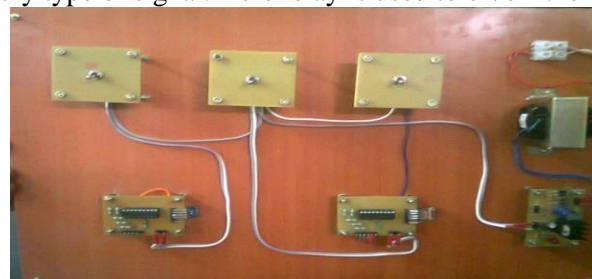


Fig.3(b) Transmitter section



Fig.3(c): Receiver section

CONCLUSION

We have successfully completed our project in which we have designed a border alert system to protect the fishermen. When we really implement this concept lot of problem due to sea border crossing is avoided. All the blocks in the circuit is working very satisfactorily.

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